because these words are partly Greek and partly Latin, and in the second on account of the signification given to them. A "thermostat" is an instrument for maintaining a constant temperature, so that "thermostable" should apply to a condition in which the temperature remains constant, such as that found when a piece of ice is floating on ice-cold water. Yet the adjective "thermostable" is used to mean "not affected by *change* of temperature." The writers prefer the term "acyclic" to "aliphatic." Indeed, "aliphatic" is an unwieldy adjective, suggesting the inquiry as to whether elephants are really fat.

We are further told that in the writings of biologists we may read that "un microbe *cultive* sur pommes de terre," and that "un animal *reproduit* en captivité," meaning in the first case that the microbe "can be cultivated," and in the second that the animal "reproduces itself," or, rather, "produces its offspring," in captivity. We learn also that the Latin genitive *coli* may be found used as a substantive to represent *Bacterium coli* or *B. coli* in such expressions as "cette culture renferme du coli."

We fear that the writings of English men of science are not free from the careless use of expressions which the writers themselves would not have employed had their attention been directed to them. It is also to be noted that many of the terms we have taken from the German are, perhaps, too literally translated. Why should "Farbstoff" always be rendered "dyestuff" instead of using the shorter word "dye"? Apparently there is no word for "dye" in German, so that they are obliged in Germany to use the cumbrous expression "colour-stuff."

There is, we fear, little likelihood that scientific workers will ever agree upon questions of nomenclature. About thirty years ago the British Association appointed a "Committee on Chemical Nomenclature." So long as this committee confined its considerations to the origin and history of the various chemical terms, it carried on its labours in perfect harmony, but as soon as it tackled the problem of laying down rules to guide future writers in the forms of nomenclature they should use, it was found that agreement was no longer possible, so that further meetings of the committee were abandoned.

Although complete agreement in these matters is not to be expected, we feel that there is some reason for the criticisms expressed by the authors of the memorandum.

NOTES.

WE regret to notice the death of Emile Yung, professor of zoology in the University of Geneva. A typical and patriotic Swiss, Prof. Yung studied zoology under the famous Carl Vogt, and after a period of assistantship became his successor at Geneva some thirty years ago. For many years the treatise on "Practical Comparative Anatomy," by Vogt and Yung, was a familiar book in zoological laboratories. It contained minute descriptions of a long series of types, and was uncommonly well done. Prof. Yung was greatly interested in the influence of environmental conditions on the organism, and made numerous experiments bearing on this problem. Thus he was one of the early investigators of the determination of sex in tadpoles, and supported the conclusion that the proportions of the sexes could be greatly altered by changing the diet. The value of this result was lessened, however, by the fact that the sex of the larvæ that died in the course of the experiments was not recorded. In another investigation he showed that the growth of tadpoles was modifiable by alterations of diet; thus tadpoles fed on beef grew three times as fast as those fed on plants. The effect of diverse temperatures and illuminations was also tested; thus tadpoles reared under violet light were emphatically longer than those reared under white light, and very much longer than those reared under green light. Prof. Yung took a keen interest in the description of the fauna of Switzerland, and made many a study of the plankton of the Lake of Geneva and its seasonal variations. Many of his experimental investigations had a pleasant quality of freshness. Thus we may recall how he took a score of marked bees from a hive near the lake, put them in a box, and liberated them in the country six kilometres away. Seventeen returned, some in an hour. Next day the seventeen were taken on a boat to a distance of three kilometres on the lake. When liberated, they flew about aimlessly, and none returned. Throughout a vigorous life Emile Yung did much for science, and his genial personality will be long remembered.

THE *Revue Scientifique* announces that Dr. Armand Thevenin, of the Sorbonne, died on March 7, aged forty-eight. He had been experimenting for some time with poisonous gases for the use of the French Army, and in the course of this work contracted an illness which unfortunately proved fatal. Geologists and palæontologists will lament Dr. Thevenin's premature loss, for he was one of the most accomplished members of the French school, full of activity in important research. For many years he collaborated with the Geological Survey of France on the south-western margin of the central plateau, and did much valuable work in stratigraphy. He was, however, more especially interested in fossils, and both at the Paris Museum of Natural History and (after 1913) at the Sorbonne he was engaged in many researches of which he published important results. His memoirs on the Permian reptiles and amphibians of France and on various fossils from Madagascar, contributed to the *Annales de Paléontologie,* will be specially remembered. Dr. Thevenin was president of the Geological Society of France in 1914, and received from the Academy of Sciences "le grand prix des sciences physiques" in 1909.

THE death is announced of Dr. Friedrich August Rothpletz, professor of geology and palæontology in the University of Munich. Born at Neustadt-a.-d.-Haardt, Bavarian Palatinate, on April 25, 1853, he graduated at Leipzig in 1882, and was engaged for some time on the Geological Survey of Saxony. In 1884 he became privat-dozent at Munich, in 1895 he was made extraordinary professor, and in 1904 he succeeded Prof. K. A. von Zittel as professor. Prof. Rothpletz had a very wide interest in geology, and wrote much on subjects so far apart as the structure of calcareous algæ and the folding of the rocks in mountain ranges. He was, however, always particularly fascinated by the geological problems presented by the Alps, and to these he devoted two important volumes, "Geotektonische Probleme" in 1894, and "Geologische Alpenforschungen" in 1900–8. He also studied the marine geological formations of the Canary Islands, and co-operated with Dr. Simonelli in a memoir on this subject, published by the Geological Survey of Spain in 1898. Prof. Rothpletz was well known to the geologists of this country, and was elected foreign correspondent of the Geological Society of London in 1894, and foreign member in 1905.

After thirty-eight years' service, Mr. Richard Hall has retired from the staff of the geological department of the British Museum. Entering the museum as an ordinary mason, he soon acquired remarkable skill in preparing fossil skeletons, and so did much to facilitate the progress of vertebrate palæontology. His extrication of the bones of Pariasaurus and Cynognathus from an almost intractable matrix began a new era in the study of South African fossil reptiles, which had previously been only imperfectly prepared; and *Dicynodon halli* is named to commemorate his success in this work. He also prepared the fine skeleton of Hyperodapedon from Elgin, described by Prof. Huxley in 1887, besides many other fossils now exhibited in the public galleries of the museum.

The seventy-first annual meeting of the Palæontographical Society was held at Burlington House on April 5, Dr. Henry Woodward, president, in the chair. Besides instalments of the monographs of Pliocene Mollusca, Cambrian Trilobites, Palæozoic Asterozoa, and Wealden and Purbeck Fishes, the first part of a new monograph of British Bellerophontacea, by Dr. F. R. C. Reed, was announced for publication. Mr. C. H. Cunnington, Mr. E. Gibson, Mr. A. W. Oke, and Dr. A. Strahan were elected new members of council; Dr. Strahan was elected new vice-president; and Dr. Henry Woodward, Mr. Robert S. Herries, and Dr. A. Smith Woodward were re-elected president, treasurer, and secretary respectively. In a brief address the president paid a tribute to the memory of Dr. G. J. Hinde, who for many years took an active part in the work of the society.

The council of Girton College recently decided to endeavour to raise a sum of money with which to found a fellowship for the encouragement of research in natural science, and especially in botany, as a memorial of Miss Ethel Sargant, whose original contributions to botany gained for her a prominent and honourable position in the scientific world. Miss Sargant was not only an original investigator of great ability, but she also consistently advocated the importance of providing opportunities of research for others. She was the first woman to preside over a section of the British Association and to serve on the council of the Linnean Society. Subscriptions may be sent to Miss E. Lawder (hon. treasurer of the Executive Committee of the Ethel Sargant Memorial Fund, Girton College), 25 Halifax Road, Cambridge.

The death is announced of Prof. Christian Hornung, at the age of seventy-three. For fifty years Prof. Hornung held the chair of mathematics and astronomy in Heidelberg University, Tiffin, Ohio.

Prof. J. H. Jeans and Sir William S. McCormick have been elected members of the Athenæum Club under the provisions of the rule of the club which empowers the annual election by the committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public service."

The *Times* of April 9 announces the sudden death, in his sixty-first year, of Pandit Sir Sundar Lal, Vice-Chancellor of the University of Allahabad, and representative of the University on the Provincial Legislature. The successful organisation of the Benares Hindu University was largely due to his efforts, and he was its first Vice-Chancellor.

At the ordinary scientific meeting of the Chemical Society, to be held at Burlington House on April 18, at 8 p.m., the first of the Hugo Müller lectures will be delivered by Sir Henry Miers, who has chosen as his subject "The Old and the New Mineralogy."

The *Bulletin des Usines de Guerre* for March 18 (quoted in *Le Génie Civil*) gives particulars of a motor-car propelled by hydrogen which is probably the first of its kind. Experiments made with the vehicle show: (1) that a car motor can be made to work perfectly well with a mixture of pure hydrogen and air; (2) that it is not necessary to modify the construction of the motor; and (3) that the motor can be worked with a simple type of carburettor.

It is announced in *Science* that Prof. J. M. Coulter, professor of botany in the University of Chicago, has been elected president of the Chicago Academy of Science. Prof. Coulter is this year president of the American Association for the Advancement of Science and of the American Association of University Professors. Our contemporary also states that Dr. G. T. Moore, director of the Missouri Botanical Garden, has been elected president of the Academy of Science of St. Louis, to succeed Dr. E. A. Engler, whose death we announced recently.

The Minister of Munitions, in agreement with the Secretary of State for the Colonies and the Petroleum Executive, has appointed a Committee to inquire into certain matters relating to the production of fuel oil from home sources. The terms of reference are:—"To consider the report which has been rendered by the Petroleum Research Department on the production of fuel oil from home sources, and to advise to what extent, and within what time, it should be possible under present conditions to carry out the proposals made in this report; and to consider the steps which have been taken by the Ministry of Munitions in this connection." The members of the Committee are:—Marquess of Crewe (chairman), Col. A. Stirling, Maj. G. Collins, Engineer Vice-Admiral G. G. Goodwin (Engineer-in-Chief of the Navy), Sir Richard Redmayne (representing the Controller of Coal Mines), Sir Lionel Phillips (representing the Ministry of Munitions); secretary, Mr. G. C. Smallwood (Ministry of Munitions).

With the view of endeavouring to meet the coal shortage which has arisen, due to the tonnage question, the Danes have commenced the exploitation of the lignite deposits of Iceland and the Faroe Islands, while recent announcements indicate that an attempt will be made to work the coal-beds of the island of Bornholm. These latter deposits have been worked before, but had to be abandoned owing to difficulties of exploitation and the low calorific value of the fuel. The geological conditions, etc., have been given in a description of the island by Grönwall and Milthers published by the Danish Geological Department. Nevertheless, it is stated (*La Nature*, March 30) that geologists and a capitalist have resolved to take in hand the further exploitation of these deposits. The newspapers announce that it is hoped to obtain a yield of 500,000 tons per annum before long.

In an article in the *Morning Post* of April 4 entitled "The Long-range Gun: Some Future Possibilities," it is stated that military opinion in Germany and Austria seems to be that the bombardment of Paris is an experiment to obtain data for a similar attack on London. It is pointed out that once the problem of projecting shells to a range of seventy or eighty miles has been solved, speedy developments are certain to follow, with the possible result that shells, more destructive than those now being fired into Paris, could be thrown from Ostend to London, a distance of some 130 miles. It is pointed out that if the experiments on long-range ballistics, which were initiated in this country in 1887, had not been curtailed owing to the stupidity of our officials and politicians, we should probably have been the first to produce such a long-range gun, and it is urged that we should set to work at once to produce a better weapon than the German gun.

THE results of two expeditions equipped by Mr. I. Wanamaker—one to work in the south, the other in the north, of Alaska—are described in the *Museum Journal* (vol. viii., No. 2, June, 1917). Among the collections received are old works of art handed down for many generations in the Chilkat tribe. The northern expedition worked among the Eskimo on the shores of the Arctic Ocean, who have been seldom visited, and retain many of their characteristic institutions. This expedition will throw much light on the chain of pure Eskimo culture which reaches from Labrador on the Atlantic side of the continent across the shores of the Arctic Ocean and Bering Sea to the Northern Pacific.

MR. B. C. WALLIS has contributed to the *Geographical Review* (vol. iv., No. 6, December, 1917) a paper on "The Peoples of Hungary: their Work on the Land." The paper gives a good instance of geographical control upon the life of man. The Magyar is deep-rooted in the heart of Hungary, the central Alföld. The Slovaks show a definite tendency towards the development of an economic life which essentially differs from that of the other races, due in part to the mountains and plains of which their land is composed, and yet in sharp contrast with the life of the Rumanians in Transylvania, where the best farm work is usually done by Germans or Magyars. This Slovak development has occurred in the face of direct opposition from the Magyar official class. The work of the Slovaks is also of greater value than that of either Croat or Serb in the south-west.

DR. A. J. CHALMERS and Wäinö Pekkola have published in the *Annals of Trop. Med. and Parasitology* (vol. xi., No. 3, pp. 213–64, two plates) a memoir on *Chilomastix mesnili*, a flagellate protozoon common in the intestine of man. A detailed account is given of the history of our knowledge of this organism, and of the morphology, fission, cyst formation, and systematic position. The authors believe that an infection can persist for years, but that when the organism increases in numbers it becomes pathogenic and causes diarrhœa. After a consideration of the known species of Chilomastix with the view of finding whether any animal is a carrier, the authors conclude that man is the important carrier of *C. mesnili*, and that the infection spreads from man to man by means of the cysts.

IT is notorious that much more study has been devoted to the form than to the function of teeth. A recent paper entitled "Form and Function of Teeth: A Theory of Maximum Shear" (*Journ. of Anat.*, October, 1917), by Mr. D. Macintosh Shaw, of the Royal Dental Hospital, is particularly welcome, because it deals with the functional significance of dental cusps. Mr. Shaw has applied to the mechanism of mastication the "immense body of knowledge built up by engineers and mathematicians," and finds that the teeth are so shaped, set, and moved as to produce a maximum shearing stress on the material placed between their opposed blades. That the front, or incisor, teeth can act as shearing blades has been long acknowledged, but the application of this doctrine to the molar, or cheek, teeth is new. Mr. Shaw regards the outer, or buccal, cusps as shearing blades; the function of the inner, or lingual, cusps is quite different: they serve to retain the food in position so that it may be subjected to the shearing force applied through the outer cusps. He also points out how necessary canine teeth are to serve as guiding structures; canine teeth, by their sliding contact, ensure the alignment of the opposing shearing edges of the molar and premolar teeth. The crowns of the teeth are shaped so as to protect the gums from the impact of food during mastication.

DURING the past winter several distinguished medical men have been invited to Edinburgh to discuss the best means of improving the teaching of medical subjects. It was a fortunate choice that led to the invitation of Prof. Elliot Smith, of Manchester, to discuss "The Teaching of Anatomy." His lecture may be read in full (*Edinburgh Medical Journal*, March); here we need only summarise his chief conclusions. In his opinion "anatomy should be regarded as an integral and intimately co-ordinated part of the whole medical course, and it should be the business of the teacher to give expression to this broad view in his teaching." The anatomy taught must refer to the *living*, not to the *dead*, body. Dissection is essential for the proper training of the medical student. "The primary value of dissection to the student is to enable him to find his way about the body. Much of the knowledge he acquired is of a subconscious nature, but is none the less real on that account. By a limited experience I have learned to find my way from Princes Street to the University, but I cannot name a single street or landmark, nor give more than the vaguest description of the route, yet I have the essential knowledge which meets my needs. The vital knowledge of anatomy is of a similar nature." Prof. Elliot Smith regards the delivery of a systematic course of lectures on anatomy as indefensible, and the teaching of osteology as a separate subject as a "wicked and sterilising farce." The ideal course of instruction which he maps out aims at making anatomy the real basis of medical education.

THE Mediterranean fruit-fly (*Ceratitis capitata*, Wied.), which has been introduced from Australia into Hawaii, where it has caused "a serious and permanent check upon horticultural pursuits," is described at length by E. A. Back and C. E. Pemberton in a recent Bulletin (No. 536) of the U.S. Department of Agriculture. The relation of the fly to various tropical fruits is discussed in detail.

BRITISH students of forest entomology may welcome the recent publication of two papers—one, by J. W. Munro, on Hylastes, a rather neglected genus of bark-beetles (Proc. R. Phys. Soc. Edinb., vol. xx., part 3, 1917), and the other on the Chermes of spruce and larch, by H. M. Steven (Proc. R. Soc. Edinb., vol. xxxvii., part 3, 1917). The latter will be especially useful as a guide to much recent Continental literature on a group with many bionomic problems.

PROF. D'ARCY THOMPSON, in the *Scottish Naturalist* for March, continues his analysis of the scarcer fishes of the Aberdeen market. In this article he passes in review the occurrences of the sturgeon, sea-bream, deal-fish, and red-mullet. The sturgeon, he shows, is most abundant off our coasts in the spring and early summer, when it is proceeding towards, or preparing to ascend, the rivers to spawn. The English records, he remarks, show a tendency to cluster round about the river mouths. "The Severn is a well-known haunt of this fish, and it would in all probability breed there if protected. All our records for that river are for April and May." Having regard to the importance of the sturgeon as a "food-fish," it would seem well worth while to afford the protection suggested by Prof. D'Arcy Thompson in this brief but valuable survey.

A very welcome insight into the life-history of the little penguin (*Eudyptula minor*) is afforded us by Dr. Brooke Nicholls in the *Emu*—the official organ of the Royal Australasian Ornithologists' Union—for January. Dr. Nicholls's shrewd observations have added much to our knowledge of the habits of these nocturnal birds. He has also told us much in regard to their food, moulting, the coloration of the soft parts, and the differences between the sexes, which are closely alike. His observations were made on Philip Island and neighbouring stacks. He comes to the conclusion, in spite of statements to the contrary, that there is but one species of little penguin on Philip Island, and expresses regret that these birds are "not found upon the list of our protected birds." The need for this step, he points out, is urgent, since they are now threatened by increasing settlement, and, besides, are largely used as bait by fishermen for their lobster-pots.

The special Committee appointed by the Board of Agriculture, Trinidad, to inquire into the present position and prospects of rubber cultivation in the island has recently published its report in the Bulletin of the Department of Agriculture, vol. xvi., part 3. The report is a very interesting and valuable document, tracing the history of the industry from the year 1876, when two plants of *Hevea brasiliensis*, the Para rubber, were sent from Kew to Trinidad. The report is based on returns sent in from estates, but as several replies have not yet been received the total acreage under rubber cannot be given. From the returns received there are found to be 130,593 trees of Hevea, 81,975 of Castilloa, and 45,000 of Funtumia. The return for Castilloa should be much higher, as owing to the highly favourable views entertained as to this plant it was very largely planted in the colony. Experience has shown, however, that this Central American rubber tree is far inferior in every way to Para rubber as a plantation tree, and much of the work done in Trinidad must be regarded as a failure. On many estates Castilloa has now been removed, and a good deal of rubber land is derelict. The Committee points out that there is a good deal of land in Trinidad suitable for Hevea cultivation, and the report indicates clearly the proper lines on which planting should be undertaken and the returns which may be anticipated. The report ends with a summary of recommendations, in which the Committee states that, while cacao, sugar, and coconuts hold first place, Hevea should certainly rank in the front line of the secondary industries, such as limes, rice, and coffee. It is also pointed out that coffee may be interplanted with Hevea. Two important recommendations relate to the need for co-operation among rubber growers, and the formation of a Rubber Planters' Association, either on lines similar to those of, or in amalgamation with, the present Cocoa Planters' Association.

The Advisory Council of Science and Industry of the Commonwealth of Australia has recently issued a bulletin upon "The Factors Influencing Gold Deposition in the Bendigo Goldfield." This goldfield is famous for the very exceptional character of its reefs of auriferous quartz, which are either bedded reefs, subdivided into saddle reefs, trough reefs, and leg reefs, or fault reefs or spurs. A large number of data concerning these reefs has been collected, but the inferences that can be drawn from these have not, so far, proved very helpful to the prospector. It is pointed out that the various dykes are geologically younger than the quartz reefs, and can have played no part in their origin, which is probably to be referred to the intrusion of the granodiorite in Lower Devonian times. Mineral solutions connected with this intrusion have been injected under pressure and have produced the reefs, in the case of saddle reefs mainly by the filling of fissures, in the case of the other types of deposit, mainly by replacement. The gold in the reefs is principally concentrated on the walls, and its distribution is never uniform along the reefs. Whilst "the replacement origin of the reefs provides a possible explanation for the gold shoots," it has to be admitted that "some additional factors, at present unknown or only guessed at, must influence the localisation of the shoots"; in other words, science has not yet progressed far beyond the old Cornishman's "Where she be, there she be"!

A novel method of investigating the variation of the germicidal action of ultra-violet light with wave-length has recently been described in the Proceedings of the Royal Society, series B, vol. xc., by Drs. C. H. Browning and S. Russ. The method consists in photographing the ultra-violet spectrum on plates covered with a film of gelatine or agar-agar inoculated with micro-organisms instead of on an ordinary photographic plate. After suitable exposure these plates are incubated, and the action of the radiation is thereby rendered visible; those parts affected by the radiation remain transparent, while the remaining parts become opaque owing to the copious growth of the organisms which were not destroyed by the action of the rays. The region of activity of the radiation is between the wave-lengths 2960 and 2100 Å.U., with a maximum in the region 2800 to 2540 Å.U.; the rays are, however, easily absorbed by 0·1 mm. of skin, so that this type of radiation can only be effectual in dealing with organisms on the surface of a wound. The range of susceptibility varies slightly for different organisms, but not sufficiently so to provide a means of differentiating between several kinds.

An account of the optical stores captured from the enemy, which were exhibited and described to the Optical Society in November by Lt.-Col. A. C. Williams, is given in the November issue of the Transactions of the society. The collection is fairly representative, and includes range-finders, directors for field and heavy artillery, dual sights, clinometers, sighting arcs, stereoscopic telescopes, periscopes, and sighting telescopes for machine-guns. Col. Williams pointed out how they all showed evidence of careful design and high-class workmanship, how lacquer had been discarded in favour of a tough, well-stoved enamel, and how in many cases the instruments had been painted after completion in order to cover all screws and render the instruments waterproof. Single complex prisms have been substituted for double reflecting prisms in order to diminish the loss of light and to facilitate adjustment. The balsaming of prisms together was well done, and the balsam very hard. From the discussion which followed the exhibition it appeared that while there was no new principle involved in the instruments captured, the working out of the details showed evidence of great care, and would repay study on the part of British instrument-makers. The instruments may be examined by permission of Prof. F. J. Cheshire, Imperial College of Science, South Kensington.

A long paper by Prof. Palazzo, chief of the Italian Meteorological Service, discussing magnetic observations taken at Theodosia, in the Crimea, between August 17 and 28, 1914, appears in the *Memorie della Società degli Spettroscopisti Italiani* (vol. vi., 1917).

The object of the observations was to obtain data for August 21, the date of a solar eclipse, which was total at Theodosia, and for comparison data from some adjacent days. The records were derived with the aid of a magnetograph of the Mascart type, which is fully described and illustrated by photographs. The curves were read at five-minute intervals for some hours during the time of the eclipse, and the tabulated results for declination, horizontal force, and vertical force are compared with the corresponding mean results from the adjacent days. The data are exhibited graphically in curves, with corresponding data from De Bilt (Netherlands), Rude Skov (Denmark), Seddin (Germany), and Ekaterinburg (Russia). In the case of horizontal and vertical force, it is shown that some movements, which might not unnaturally be associated with the eclipse if the Central European records only had been available, must be assigned to some other cause, but Prof. Palazzo is disposed to associate some of the declination phenomena with the eclipse. There are a good many references to earlier work on the subject.

Prof. A. Righi has published a second memoir (*R. Accademia delle Scienze dell' Instituto di Bologna*, November 25, 1917) dealing with the ionisation produced by X-rays in a magnetic field. In the first part of the paper Prof. Righi discusses the question raised in these columns (Nature, vol. c., p.32, p. 224, 1917) of the possibility of explaining the experimental results as to the increase of current by taking into account the oblique, and therefore longer, paths of the ions under the joint actions of the two fields. He points out that the kinetic energy of an electron (or of an ion) depends only on the electric field and on the projection of the path on the direction of the said field, and is not affected by the existence of the magnetic field. Prof. Righi's own view of magneto-ionisation is that an electron in motion can ionise a gaseous atom by collision, when this is in a magnetic field, even if the kinetic energy of the electron does not reach that minimum which is necessary when the field does not exist. On this theory it is possible to explain not only the increase in current due to the magnetic field, but also the fact that when the field is made sufficiently strong there is an inversion of the observed effect, the current diminishing instead of increasing. There are two causes at work, producing opposite effects: magneto-ionisation and the magnetic deviation or change in the paths of the particles. The former increases with the magnetic field, but reaches a limiting value; the latter increases indefinitely, and finally gets the upper hand. The paper contains an analytical discussion of the motion of an electron in a uniform electric field on which is superposed a perpendicular magnetic field, a problem previously considered by Sir J. J. Thomson ("Conduction of Electricity through Gases") and treated elegantly by a purely geometrical method by W. B. Morton (Phys. Soc. Proc., vol. xxi., p. 300, 1909). The last part of the paper gives an interesting account of new experiments carried out with an apparatus specially designed to test the existence of magneto-ionisation. Curves are given showing the relation between the current and the applied potential difference for various magnetic fields. These indicate an increase in the current when a magnetic field is applied, the increase being most marked when the potential difference exceeds a certain value depending on the strength of the magnetic field.

The so-called "iminohydrins," or *iso*amides, were first prepared by Eschweiler in 1897, who gave them the general formula $R.C(OH):NH$. They were afterwards (1901) investigated by Hantzsch, and given the dimolecular formula $NH:CR.O.NH_2:CR.OH$. Dr. H. G. Rule has studied these compounds afresh, and gives an account of his results in the January issue of the Journal of the Chemical Society. He shows that they are amidine salts of the general type $R.C(NH_2):NH,R.CO_2H$, and that "glycolliminohydrin," the first of Eschweiler's preparations, is really glycollamidine glycollate,

$$OH.CH_2.C(NH_2):NH,OH.CH_2.CO_2H.$$

The constitution of this and similar compounds is proved by its synthesis by the interaction of sodium glycollate and glycollamidine hydrochloride, this method of preparation giving a far better yield than Eschweiler's method of treating the imino-ether hydrochlorides with moist silver oxide. Besides the glycol compound methoxyacetamidine methoxyacetate, acetamidine acetate and phenylacetamidine phenylacetate were prepared, whilst mandelamidine mandelate was obtained by Dr. J. E. Mackenzie. Molecular weight determinations, by the cryoscopic method, of these compounds support the new theory of their constitution, on the assumption that they are almost completely ionised in solution. To explain the formation of these amidine salts by the action of water on the imino-ethers, Dr. Rule suggests that the latter first undergo autohydrolysis, forming ammonium salts of the corresponding acids, and that these then interact with the imino-ethers.

In a paper on the possibilities of the ferro-concrete ship read by Major Maurice Denny at the Institution of Naval Architects on March 22, the author raises the interesting point of the permissible stress on the steel reinforcement under tension, without the risk of rupture occurring in the adjacent concrete. A usual figure taken in land structures is 16,000 lb. per sq. in. for the working tensile stress in the steel; with a modular ratio of 12·5 this would produce a tensile stress of about 1300 lb. per sq. in. in the neighbouring concrete—*i.e.* a stress sufficient to produce rupture of some sort. The matter is of serious importance in ship construction, owing to the necessity for maintaining watertightness. In the discussion on this paper—reported in *Engineering* for April 5—Mr. J. Foster King provided a long and valuable contribution in the course of which reference was made to the same matter. Taking the elastic modulus of reinforced concrete to be the same as that of plain concrete—8 per cent. of that of steel—the permissible stress on the steel must not exceed 5400 lb. per sq. in. if the concrete is to remain unbroken. As reinforced concrete lost homogeneity under tensile stresses which exceed the breaking stress of the concrete by 45 per cent., the designed working stress on the concrete should be less than its own tensile strength, so as to leave such a margin between ordinary and extraordinary stresses as experience had forced upon shipbuilders. Experience of reinforced concrete had been derived from ratios of steel to concrete of about 1 per cent., and it seemed unreasonable to expect effective bond of steel and concrete when the ratio exceeds 8 per cent. Mr. King suggests experiments upon material exposed concurrently to tension and water pressure, in order to ascertain the point where steel and concrete cease to lend their properties to one another.

Erratum.—A correspondent points out that it was Pope Innocent VIII. who, in 1484, gave the sanction of the Church to the popular beliefs concerning witches referred to in Nature of April 4 (p. 82), and not Pope Innocent VII., as there stated. The reference in Dr. Withington's article was correct, but was wrongly given by the reviewer.